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(54) **Frozen instant milk shake composition.**

(57) Food product comprising an edible gas hydrate clathrate which on addition of water, milk or skim-milk provides a milk shake. A method of preparing a milk shake by mixing a fluid constituent of a usual milk shake composition with the balance of said composition also comprising an edible gas hydrate clathrate.

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## INSTANT FOOD PRODUCT

The invention relates to a method of preparing a milk shake by mixing usual constituents of a milk shake, comprising frozen and fluid constituents.

A milk shake is usually made by thoroughly mixing milk, ice-cream and a fruity material such as fruit, fruit pulp, jam, fruit syrup etc. to end up with a cold, creamy but fluid product having some overrun.

5 Overrun, defined as the volume percentage of gas, usually air, with relation to the gas-free constituents, is usually originating from the ice cream and from the whipping action of the mixing step. Fast electric mixers are usually used for preparing these milk shakes. Although milk shakes are usually prepared right before their consumption, several examples of their preparation in advance are known in the art with varying success.

10 Most of the "preserved" milk shakes are deep-frozen products which are to be thawed in a controlled manner either by exposure to the ambient temperature for some time or by exposure to micro-waves. The first method requires considerable time, while the second method is difficult to control because of the different capacities of the micro-wave ovens. In both methods maintaining the overrun at the required level is very difficult if not impossible.

15 It is an object of the present invention to provide a product and a method for easily preparing a milk shake wherein using a mechanical mixer is not necessary.

The invention provides an easy alternative for instantly preparing milk shakes by mixing a fluid constituent of a usual milk shake composition selected from the group consisting of water, whole milk, skim milk and mixtures thereof with the balance of that milk shake composition also comprising an edible gas hydrate clathrate, which mixing may be done by hand.

20 The invention also relates to a frozen food product for preparing a milk shake of a composition such that, on addition of a fluid selected from the group consisting of water, whole milk, skim milk and mixtures thereof, a milk shake of usual composition is obtained, which food product according to the invention additionally comprises an edible gas hydrate clathrate at least in an amount sufficient to bring about the required overrun.

25 In a practical embodiment, the latter product contains at least 2 but preferably 8 ml of hydrated gas per ml of frozen product.

The product can be distributed and used in several embodiments: as preportioned bodies, as a scoopable mass, as coarse particles, each particle being at least 1 ml, but preferably as a unit amount required for making one milk shake and this unit amount supported on a stirring means like a rod, a spoon or a solid tube, preferably a drinking straw. If the product is distributed as a scoopable mass it is preferably scoopable at temperatures usually maintained in domestic freezers, usually between  $-10^{\circ}\text{C}$  and  $-20^{\circ}\text{C}$  and in particular from  $-13^{\circ}\text{C}$  to  $-18^{\circ}\text{C}$ .

35 Suitably  $\text{CO}_2$ , but still better  $\text{N}_2\text{O}$  or a mixture thereof is used as a gas in the gas hydrate clathrate. In this connection may be remarked that using  $\text{CO}_2$  hydrate clathrate in ice together with flavouring materials and sugar is known from EP-A-27 375 and GB-A-1 116 072. Both documents relate to the carbonation of beverages, such as fruit drinks, cola drinks etcetera and for improving the carbonation effect the former document recommends using a closed pressure vessel.

40 Using  $\text{CO}_2$  loaded molecular sieves, such as zeolites, for a similar purpose has been described in US-A 4 025 655 and US-A-4 199 607. These processes need additional cooling and separation of the molecular sieve material from the beverage.

The invention will be explained by the following non-limitative examples.

#### 46 Example I

A mixture is prepared of

msnf*	9 parts by weight
sucrose	17.5 parts by weight
butterfat	4.5 parts by weight
stabilizer and emulsifier	0.3 parts by weight
citric acid	0.3 parts by weight
water	20.4 parts by weight

\*) "msnf" meaning milk solids non fat

After homogenising, 10 parts by weight of strawberry pulp are added and stirred into the mixture which is thereafter frozen while stirring to  $-5^{\circ}\text{C}$ . Thereafter 20 parts by weight of mixed  $\text{CO}_2$  and  $\text{N}_2\text{O}$  hydrate clathrate are stirred into the partrozen mixture. 65 grams of this mixture are moulded as a cylinder of 4 cm diameter around one end of a 20 cm long plastic tube of 5 mm diameter and frozen hard to  $-30^{\circ}\text{C}$ .

For preparing a milk shake, 35 ml of tap water are poured into a mug of 250 ml capacity. The cylinder is put into the mug and stirred into the water using the tube as a stirring rod. A cold, aerated milk shake is obtained.

A mixture is prepared of

msnf	5.1 parts by weight
sugars	16 parts by weight
butterfat	2.7 parts by weight
stabilizer and emulsifier	0.3 parts by weight
citric acid and flavour	0.4 parts by weight
water	21 parts by weight

After homogenising, 8 parts of pardried, sugar-impregnated apricot slices are stirred into the mixture, which is thereafter frozen while stirring to  $-5^{\circ}\text{C}$ . Thereafter 12 parts by weight of  $\text{N}_2\text{O}$  hydrate clathrate are stirred into the partrozen mixture, which is thereafter frozen hard into portions of 50 grams to  $-30^{\circ}\text{C}$ .

For preparing a milk shake, 50 ml whole milk (8.7% msnf, 3.6% fat) is put into a carton mug of 250 ml. One portion of the product as described before in this example is dropped into the mug, whereafter the contents are stirred with a long spoon until no frozen solids are detectable. A cold, aerated milk shake is obtained.

In the above examples  $\text{N}_2\text{O}$  hydrate clathrate is used as an aerating agent.  $\text{CO}_2$  hydrate clathrates may be used with comparable results, however resulting in a more acid taste, which sometimes gives a slightly less attractive overall taste impression.

## Claims

1. Frozen food product for preparing a milk shake of a composition such that, on addition of a fluid eelcted from the group consisting of water, whole milk, skim-milk and mixtures thereof, a milk shake of usual composition is obtained, characterized in that the food product additionally comprises an edible gas hydrate clathrate at least in an amount sufficient to bring about the required overrun.
2. Frozen food product according to claim 1., characterized in that it contains at least two ml and preferably eight ml of hydrated gas per ml of frozen product.
3. Frozen food product according to claim 1. or 2., characterized in that it is portioned in unit portions each supported on a stirring means.
4. Frozen food product according to claim 1. or 2., characterized in that it is scoopable in the temperature range of from  $-10^{\circ}$  to  $-20^{\circ}\text{C}$ .
5. Frozen food product according to claim 1. or 2., characterized in that it is coarse particulate, the volume of each particle being at least 1 ml.
6. Frozen food product according to claim 3., characterized in that the stirring means is a tube and particularly a drinking straw.
7. A method of preparing a milk shake by mixing a fluid constituent of a usual milk shake composition

selected from the group consisting of water, whole milk, skim milk and mixtures thereof with the balance of said composition, characterized in that the balance comprises an edible gas hydrate clathrate.

8. A method according to claim 7., characterized in that a product according to any of the claims 1. to 6. is used.

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